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ABSTRACT

Project COM-TECH offered bilingual individualized instruction, using an enrichment approach, to Spanish- and Haitian Creole-speaking students with varying levels of English and native language proficiency and academic preparation. The program provided supplementary instruction in English as a Second Language (ESL); Native Language Arts (NLA); and bilingual mathematics, science, and social studies to 344 students at Bushwick High School in Brooklyn (New York City) and Louis D. Brandeis High School in Manhattan (New York City). Project COM-TECH provided a resource center at both high schools, where the staff offered individualized computer instruction, tutoring, career and college advisement, and personal counseling and academic advising. The project's main goals were for limited-English-proficient students to acquire optimal English skills, native-language proficiency, and an appreciation of their cultural heritage. The project met its objective in ESL and attendance. Data was not provided for evaluating the objectives in NLA, cultural awareness, attitude towards school, and staff awareness of pupil needs and problems. The project failed to meet its staff development and parental involvement objectives. (GLR)

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# OREA Report

## EVALUATION SECTION REPORT

## BILINGUAL ACADEMIC COMPUTER AND TECHNOLOGY ORIENTED PROGRAM

PROJECT COM-TECH
Grant Number G008525023

1988-89

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EVALUATION SECTION
John E. Schoener, Chief Administrator
April 1990

# EVALUATION SECTION REPORT

## BILINGUAL ACADEMIC COMPUTER AND TECHNOLOGY ORIENTED PROGRAM

PROJECT COM-TECH
Grant Number G008525023

1988-89

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BILINGUAL COMPUTER AND TECHNOLOGY ORIENTED PROGRAM
PROJECT COM-TECH
1988-89

SUMMARY


- During the 1988-89 school year, students participating in Project COM-TECH received instruction in English as a Second Language, Native Language Arts, and bilingual content areas. The project provided opportunities for parental involvement.

- The project met its objective in English as a Second Language and attendance. The program did not provide data for OREA to evaluate the objectives in Native Language Arts, cultural awareness, attitude towards school, and staff awareness of pupil needs and problems. Project COM-TECH failed to meet its staff development and parental involvement objectives.

The Bilingual Computer and Technology Oriented Program (Project COM-TECH) was in its fourth year, the first year of a two-year funding renewal by Title VII of the Elementary and Secondary Education Act (E.S.E.A.). Project COM-TECH offered bilingual individualized instruction, using an enrichment approach, to Spanish- and Haitian Creole-speaking students with varying levels of English and native language proficiency and academic preparation. Three hundred and thirty-four students participated at Bushwick High School in Brooklyn and Louis D. Brandeis High School in Manhattan.

Project COM-TECH provided a resource/computer center at both schools, where the project staff offered individualized computer instruction, tutoring, career and college advisement, and academic and personal counseling. However, delivery of these services was impeded by the poor physical plant at Louis D. Brandeis High School and by the nonprogram teaching responsibilities of both resource specialists. The project provided cultural and career-oriented trips for participating students at Bushwick High School as well as activities for parents.

Project COM-TECH provided supplementary instruction in English as a Second Language (E.S.L.); Native Language Arts (N.L.A.); and bilingual mathematics, science, and social studies. The program met its E.S.L. objective but did not meet its N.L.A. objective. The project did not supply data for OREA to assess the objectives for cultural awareness, attitude towards school, or staff awareness of pupil needs. The project met its attendance objective but did not meet its staff development or parental involvement objectives.

The conclusions, based on the findings of this evaluation, lead to the following recommendations:

- Free the resource specialists at both sites from their teaching responsibilities so that they can devote all their time to the resource/computer centers.
- Either provide data to evaluate all objectives as proposed, or revise the objectives.
- Remove the lathes cluttering the resource/computer room at Louis D. Brandeis High School.

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# I. INTRODUCTION

This report documents the Office of Research, Evaluation, and Assessment's (OREA's) evaluation of the Elementary and Secondary Education Act (E.S.E.A.) Title VII program, Bilingual Academic Computer and Technology Oriented Program (Project COM-TECH). The project was in its fourth year, the first year of a two-year funding renewal. The target population consisted of 334 students of limited English proficiency (LEP students) at Louis D. Brandeis and Bushwick High Schools. Project COM-TECH's goal was to provide individualized bilingual instruction, using an enrichment approach, to Spanish- and Haitian Creole-speaking students with varying levels of English and native language proficiency and academic preparation. The project's main objective was for LEP students to acquire optimal language skills in English as well as in their native language. In addition, the project aimed at instilling in its students a sense of pride in their native culture.

## SETTING

Louis D. Brandeis High School is located in Manhattan's Upper West Side, in an area of apartment houses, welfare hotels, and public housing.

Bushwick High School is situated in an impoverished, deteriorated, high-crime area of Brooklyn.

## PARTICIPATING STUDENTS

Project COM-TECH's students came from Haiti, the Caribbean, and Central and South America. Sixty-four percent of the

project's students were over-age for their grade placement. (See Table 1.)

All participating students were LEP, and the majority were recent immigrants. They demonstrated varying amounts of proficiency in the English language and strong differences in educational backgrounds. Many were illiterate in their native language. Although a number of Haitian students had some knowledge of spoken French, the language of instruction, most had serious problems reading and writing the language.

STAFF

At each of its two sites, Project COM-TECH's Title VII staff consisted of a resource specialist and a paraprofessional. The two resource specialists could not work full time at the computer/resource centers as proposed. Due to a lack of bilingual teachers, the resource specialist at Bushwick High School had to teach two classes of English a day, and the specialist at Louis D. Brandeis High School taught three classes a day. This left them only three or four periods a day for the resource center. The resource specialists tutored and counseled project students and provided computer-assisted instruction. The resource specialist at Louis D. Brandeis High School had a Ph.D. in French and 14 years of experience in education. The resource specialist at Bushwick High School was an alumnus who had a bachelor's degree and four years of experience in bilingual education.

TABLE 1

Number of Program Students by Age and Grade[a]

| Age | Grade 9 | Grade 10 | Grade 11 | Grade 12 | Total |
|---|---|---|---|---|---|
| 14 | 12 | | | | 12 |
| 15 | 22 | 13 | 3 | 1 | 39 |
| 16 | 22 | 18 | 4 | 1 | 45 |
| 17 | 17 | 27 | 18 | 10 | 72 |
| 18 | 12 | 27 | 17 | 16 | 72 |
| 19 | 2 | 10 | 11 | 16 | 39 |
| 20 | | 4 | 8 | 22 | 34 |
| 21 | | | | 9 | 9 |
| 22 | | | | 2 | 2 |
| TOTAL | 87 | 99 | 61 | 77 | 324[b] |

Over-Age Students

| | | | | | |
|---|---|---|---|---|---|
| Number | 54 | 68 | 36 | 49 | 207 |
| Percent | 62.1 | 68.6 | 59.0 | 63.6 | 63.8 |

Note. Framed boxes indicate expected age range for grade.

[a]As of June 1989.

[b]Data were missing for ten students.

- The largest number of students were in the tenth grade.
- Over one-half of the students were over-age for their grade.

The paraprofessional at Louis D. Brandeis High School worked in the resource center four periods a day and assisted in content area and native language arts classes for three periods. At Bushwick High School, the paraprofessional provided full time computer instruction. Both paraprofessionals had some college education.

All project staff were native speakers of the languages of the students they served.

The schools' principals and assistant principals of foreign languages supervised Project COM-TECH's on-site staff. At Louis D. Brandeis High School, a bilingual coordinator served as liaison between the E.S.L. and foreign language departments, the content area departments, and the Title VII project.

## DELIVERY OF SERVICES

Project COM-TECH provided its target population with interdisciplinary bilingual instruction according to each student's needs, abilities, and career goals. The project offered supplementary instruction in English as a Second Language (E.S.L.); Native Language Arts (N.L.A.); and mathematics, science, and social studies.

Project COM-TECH offered E.S.L. classes to the parents of participating students.

## REPORT FORMAT

This report is organized as follows: Chapter II describes the evaluation methodology; Chapter III presents an analysis of

the qualitative findings of the evaluation; Chapter IV offers an analysis of the quantitative findings; and Chapter V gives conclusions and recommendations based on the results of the evaluation.

## II. EVALUATION METHODOLOGY

### EVALUATION QUESTIONS

The evaluation assessed two major areas, program implementation and outcomes. Evaluation questions included the following:

#### Process/Implementation

- Did the program select students for participation according to specific criteria?
- Did the project implement the instructional activities for developing English language proficiency as proposed?
- Did the project provide students with bilingual support services?
- Which of the planned activities for parents were most successful in increasing parental involvement in the project?

#### Outcome

- What was the average Normal Curve Equivalent (N.C.E.) gain on the LAB?
- What percentage of program students passed their courses in mathematics, science, and social studies?
- How did the attendance rate of program students compare with that of mainstream students?

### EVALUATION PROCEDURES

#### Sample

An OREA field consultant interviewed all program staff and the schools' principals. She observed classes in E.S.L., N.L.A., social studies, and science. OREA provided student data forms

for each participating student; Project COM-TECH returned 324 completed forms.

Instruments

OREA developed interview and observation schedules for the field consultant's use. Project personnel used OREA-developed data retrieval forms to report student demographic, attendance, and achievement data. The project used the Language Assessment Battery (LAB), the Spanish reading test La Prueba de Lectura, and teacher-made tests to assess student achievement.

Data Collection

Interviews and observations took place during the spring semester. OREA staff members supplied the project director with a questionnaire and student data forms in both the fall and the spring. The project returned the student data forms at the end of each semester and the questionnaire at the end of the spring semester.

Data Analysis

OREA used the Language Assessment Battery to assess improvement in English proficiency. Project COM-TECH students were tested at grade level each spring. Students' raw scores were converted to Normal Curve Equivalent (N.C.E.) scores, which have multiple advantages over other scoring methods. They are standard, normalized, and form an equal interval scale. ("Standard" indicates that the unit of measurement is a fraction of the standard deviation of the original distribution of raw

scores; "normalized" refers to the fact that the scale is adjusted for the norm group so that its distribution has the shape of a normal distribution; and "equal interval scales" allow for legitimate aggregation or averaging of scores.) Project students' N.C.E.s indicated their standing in relation to the national average of 50.

To assess the significance of students' achievement in English, OREA computed a correlated *t*-test on LAB N.C.E. scores. The *t*-test determined whether the difference between the pre- and posttest scores was significantly greater than would be expected by chance variation alone.

To insure representative achievement data, OREA included only those students who had been in the program for at least five months and had attended classes for at least 100 school days. OREA extrapolated to estimate full-year scores of late-arriving and early-exiting students.

Limitations

Since all LEP students are entitled to receive bilingual and E.S.L. services, OREA was unable to select an equivalent control group. However, the use of two sets of data, as outlined above, served in lieu of a control group.

## III. EVALUATION FINDINGS: IMPLEMENTATION

Project COM-TECH provided LEP students with E.S.L., N.L.A., and bilingual mathematics, science, and social studies classes; and computer-assisted instruction. The project's non-instructional component included support services and activities for parental involvement.

### STUDENT PLACEMENT AND PROGRAMMING

Students were selected for the program on the basis of their scores on the Language Assessment Battery (LAB)*, school records, letters of recommendation from teachers, and personal interviews. Project COM-TECH was open to LEP students from all five boroughs if comparable services were not available in their immediate neighborhoods. Teacher recommendations and placement test scores determined students' placement into courses.

### INSTRUCTIONAL ACTIVITIES

#### English as a Second Language

Both sites offered E.S.L. classes at beginning, intermediate, advanced, and transitional levels. Louis D. Brandeis High School also offered an accent-correction class twice a week. During the summer of 1989, Bushwick High School

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*The Language Assessment Battery (LAB) was developed by the Board of Education of the City of New York to measure the English-language proficiency of non-native speakers of English in order to determine whether they can participate effectively in classes taught in English. Students scoring below the twenty-first percentile on the LAB are entitled to bilingual and E.S.L. services.

offered a special six-week literacy program in Haitian Creole to students who had failed at least two classes. The resource specialist said that the program had been very successful and all participating students had learned to read and write.

Beginning E.S.L. An OREA field consultant observed a beginning E.S.L. class of 21 at Louis D. Brandeis High School. A paraprofessional was present. The teacher distributed a handout with the text of a play, an illustration, and exercise questions. The teacher asked the students to write four sentences about the picture, then called on volunteers to read one sentence. She asked questions about the action and objects in the picture. She then read the play and asked questions to clarify the text. Next, she divided the class into two groups and assigned students in each group the parts of different characters in the play to read. She and the paraprofessional each worked with a group.

Intermediate E.S.L. The field consultant observed an intermediate E.S.L. class of 12 at Bushwick High School. The teacher began the lesson by asking one student to make a direct statement in the present tense, then asked another student to change it into an indirect statement. She went around the room calling on students to either make direct statements in different tenses or to change direct to indirect statements. After she drew a diagram on the board illustrating the relationship between the tenses, she handed out a sheet of exercises requiring students to change statements from the direct to the indirect

form of address. The students worked quietly at their seats while the teacher circulated, checking their work.

Native Language Arts

At both sites, the assistant principal of foreign languages was in charge of N.L.A. instruction. Both schools provided program students with elementary, intermediate, and advanced classes in N.L.A.

Content Area Subjects

Bushwick High School offered program students bilingual content area classes in global history, American history, economics, fundamentals of mathematics, human biology, chemistry, word processing, and keyboarding. Due to a shortage of bilingual teachers, Louis D. Brandeis High School offered fewer content area courses--global studies, sequential mathematics, algebra, and general science.

An OREA consultant observed a French/Haitian Creole algebra class of 21 students at Louis D. Brandeis High School. A paraprofessional was present. The teacher asked the students to solve four equations in their notebooks, while four students worked at the board. He reviewed the board work and asked for corrections. The teacher then initiated a discussion on types of triangles and presented the Pythagorean theorem. Oral instruction was in Haitian Creole and board notes were in French. The paraprofessional circulated around the room, assisting students with their work.

The field consultant observed a chemistry class of 19 at Bushwick High School. The lesson was on classifying acids. He lectured for most of the class, writing equations on the board and pausing to answer questions. The teacher spoke and wrote on the board in Spanish.

## NONINSTRUCTIONAL ACTIVITIES

### Support Services

Project COM-TECH staff at both sites used a computer/resource room to provide program students with academic and personal counseling, career and college advisement, and computer instruction.

At Louis D. Brandeis High School, the project resource center had formerly been a woodshop, and several large lathes cluttered the room. The center, with five computers, was open to program students on a walk-in basis for five periods a day.

At Bushwick High School, the resource/computer center was open for eight periods a day. The room contained two operable computers and some additional hardware. The school did not program students for the resource room, nor did students have free periods to use the room on a drop-in basis, so the project scheduled most students during their lunch periods. Students who needed intensive remedial help came several times a week, others came once a week. The resource specialist, however, had other teaching responsibilities at the time when most students were able to come in.

The resource specialist and paraprofessional at Bushwick High School provided individual tutoring in basic computer literacy and keyboarding, and assisted students with homework projects. Each student kept a folder of work and his/her computer disk. A tutor from New York University worked with students and set up a computer telecommunications program which linked Bushwick High Schools with other high schools, the N.Y.U. library, and the University of Puerto Rico.

Project staff arranged trips for program students to Albany, the Brooklyn Botanical Garden, and around Manhattan by boat.

Staff Awareness of Pupil Needs and Problems

The program objective for staff awareness of pupil needs and problems was that:

- Eighty-five percent of the program staff will demonstrate an increase in awareness of pupil needs and problems as indicated by a 5-point scale of problems and needs inventory.

OREA was unable to ascertain whether Project COM-TECH met this objective since the program did not provide the required data.

Staff Development

The program's objective for staff development was:

- All project staff members will enroll in at least one teacher education course each semester.

In 1988-89, neither of the resource specialists pursued college courses, but the paraprofessional at Louis D. Brandeis

High School enrolled in two courses at Hunter College. The project failed to meet its staff development objective.

Parental Involvement

The program objective for parental involvement was:

- At least 30 percent of the students' parents will participate in open school meetings each year.

Project staff contacted families and made home visits. However, there was a low level of parent participation at both sites. Each semester, 15 parents of project students at Louis D. Brandeis High School and seven at Bushwick High School attended Open School Night. The lack of parental involvement may have been due to several factors: the lack of a tradition of parental involvement in school activities, parents' inability to take time off from their jobs, and possible fear of making contact with the school because of illegal immigration status. Project COM-TECH failed to meet its parental involvement objective.

## IV. EVALUATION FINDINGS: OUTCOMES

### INSTRUCTIONAL ACTIVITIES

The project proposed instructional objectives for English as a Second Language, Native Language Arts, and content area subjects.

### English as a Second Language

The evaluation objective for English language development was:

- As a result of participation in the program, students will make statistically significant gains in English language proficiency.

Project COM-TECH provided complete LAB pre- and posttest scores for 98 students. (See Table 2.) Gains for reported students were statistically significant ($p < .05$). The mean N.C.E. gain was 6.8 (s.d.= 10.4). The project met its objective.

### Native Language Arts

The evaluation objective for native language development was:

- Seventy-five percent of the Spanish-dominant participants will demonstrate a significant increase in Spanish-language achievement as indicated by significant improvement at the .05 level of statistical significance when results of La Prueba de Lectura are analyzed using a correlated *t*- test.

- Seventy-five percent of the Haitian Creole-dominant participants will demonstrate a significant increase in native-language achievement as indicated by a significant improvement at the .05 level of statistical significance when results of a teacher-made instrument are analyzed using a correlated *t*-test.

TABLE 2

Pretest/Posttest N.C.E. Differences
on the Language Assessment Battery, by Grade

| Grade | Number of Students | Pretest Mean | Pretest S.D. | Posttest Mean | Posttest S.D. | Difference Mean | Difference S.D. | t Value |
|---|---|---|---|---|---|---|---|---|
| 9 | 16 | 5.7 | 4.9 | 11.1 | 2.7 | 5.4 | 8.1 | 2.7* |
| 10 | 50 | 9.0 | 8.1 | 14.5 | 11.3 | 5.5 | 11.2 | 3.5* |
| 11 | 24 | 12.2 | 10.7 | 19.7 | 14.2 | 7.5 | 9.3 | 3.9* |
| 12 | 8 | 11.8 | 9.8 | 27.5 | 12.5 | 16.0 | 10.8 | 6.3* |
| TOTAL[a] | 98 | 9.5 | 8.7 | 16.3 | 12.7 | 6.8 | 10.6 | 6.5* |

* $p<.05$.

[a]Data were missing for more than two-thirds of the students.

- Overall, all reported students made statistically significant gains on the LAB; thus achieving a program objective in E.S.L.

Project COM-TECH did not provide data for OREA to evaluate the objectives as stated. However, OREA looked at students' performance in N.L.A. and found that 83 percent of 87 students taking Spanish classes at Bushwick High School and 83 percent of 23 students taking Haitian Creole classes at Louis D. Brandeis High School achieved a passing grade of 65 or more. Therefore, although OREA could not assess the objective as proposed, the students appear to have performed well in their N.L.A. classes.

Content Area Subjects

The program objective for content area subjects was:

- At least 75 percent of program students enrolled in mathematics, science, social studies, and business/vocational courses will score at or above the passing criterion of 75 each semester.

Only in the business course offered in the spring at Louis D. Brandeis High School did passing rates rise above 75 percent. (See Table 3.) The program failed to meet its objective for content area subjects.

NONINSTRUCTIONAL ACTIVITIES

The project proposed noninstructional outcomes in attendance, cultural awareness and attitude toward school, staff awareness of pupils' needs and problems, staff development, and parental involvement.

Attendance

The program objective for student attendance was:

- As a result of participation in the program, students' attendance will be significantly higher than the attendance of mainstream students.

TABLE 3

Passing Rates in Content Area Courses

| | Fall | | Spring | |
|---|---|---|---|---|
| | Number of Students | Percent Passing | Number of Students | Percent Passing |
| Mathematics | 135 | 20.0 | 123 | 26.0 |
| Science | 72 | 25.0 | 81 | 36.0 |
| Social Studies | 141 | 37.0 | 128 | 35.0 |
| Business | 69 | 49.0 | 59 | 49.0 |

- Project COM-TECH did not achieve its objective that 75 percent of the students would achieve a passing grade of 75.

Since the schools' attendance rate included the attendance of program students, OREA determined statistical significance between program and school attendance through the application of a z-test for the significance of a proportion. This procedure tests whether the difference between one proportion (program students' attendance) and a standard proportion (the overall school attendance rate) is greater than can be expected from chance variation alone.

The attendance rate of program students at Louis D. Brandeis High School was 92.4 percent and that of mainstream students was 79.99 percent. At Bushwick High School, the attendance rate for program students was 92.3 percent and for mainstream students 72.9 percent. The z-test results ($z=2.65$ and 2.76 respectively) indicate that the differences in attendance rates are statistically significant ($p<.05$). Thus, the program met its attendance objective.

Cultural Awareness and Attitude Toward School

- Seventy-five percent of all target students will demonstrate an improvement in attitude towards their heritage as indicated by results on an appropriate Language Cultural Heritage Attitude Scale, tabulating growth from pre- to posttesting and ascertaining the percentage of students gaining one scale point or more on a five-point scale.

- Seventy-five percent of all target students will demonstrate an improvement in attitude towards school as indicated by results on a five-point scale inventory to measure interest in continuing education beyond their present grade.

The resource/computer center at Bushwick High School contained a small library of Spanish literature, reference books, and college-oriented materials, as well as computer equipment and a variety of software.

Project staff at Bushwick High School organized a variety of cultural trips for program students to such places as the state capital, the Brooklyn Botanical Garden, and a boat trip around Manhattan. Project students also participated in a play organized by Bushwick High School's social studies department.

At Louis D. Brandeis High School, project students participated in the school's annual International Show and in a play on the French Revolution organized by the school's social studies and foreign language departments.

OREA could not assess the objectives of cultural awareness and attitudes toward school, as the project did not provide the necessary data.

## V. CONCLUSIONS AND RECOMMENDATIONS

During its fourth year of operation, Project COM-TECH served 334 LEP students at Louis D. Brandeis and Bushwick High Schools. It provided supplementary instruction in E.S.L., N.L.A., content areas, and business/vocational courses. The resource specialists provided a variety of guidance services to students in their native language.

The resource/computer center at both sites was a major strength of the project.

Project COM-TECH met its objectives in attendance. It met the E.S.L. objective, although it reported data on fewer than one-third of the students. It did not meet the objectives for staff development and parental involvement. Because of a lack of data, OREA could not determine whether Project COM-TECH had met its objectives in N.L.A. or staff awareness of pupil needs and problems.

The conclusions, based on the findings of this evaluation, lead to the following recommendations:

- Free the resource specialists at both sites from their teaching responsibilities so that they can devote all their time to the resource/computer centers.
- Either provide data to evaluate all objectives as proposed, or revise the objectives.
- Remove the lathes cluttering the resource/computer room at Louis D. Brandeis High School.